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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/576,957	05/24/2000	Atsushi Sakai	Q54388	5486

7590 02/28/2002

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EXAMINER

TRINH, MICHAEL MANH

ART UNIT	PAPER NUMBER
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2822

DATE MAILED: 02/28/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/576,957

Applicant(s)

SAKAI ET AL.

Examiner

Michael M Trinh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 7 and 15-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 47.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

*** This office action is in response to Applicant's election filed on October 11, 2002. Claims 1-28 are currently pending, in which claims 7,15-28 are non-elected without traverse.

Election/Restrictions

1. Applicant's election filed 10/11/02 without traverse of method claims 1-6 in Paper No. 11 is acknowledged. Since claims 8-14 were amended in the Preliminary Amendment filed 10/30/00 as being dependent of claims 1 or 2 by, claims 8-14 are constructively re-grouped into elected Group I, method claims 1-6.

Claims 7,18-19 are further withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a non-elected, there being no allowable generic or linking claim.

Accordingly, Claims 7,15-28 are drawn to non-elected invention.

Claim Rejections - 35 USC § 112

2. Claims 8,9,12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re Claim 8, line 2 and Claim 9, line 3, meaning and scope of "or precursor thereof" are indefinite and unclear for what precursor.

Re claim 12, last line, meaning and scope of "or any substituted derivative thereof" are indefinite and unclear for what are they.

3. Claims 1-6,8-14 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention, in forming and using the solid electrolyte capacitor as described.

As recited in base claim 1-2 that "...solution that infiltrates into the dielectric film..."; and as described in specification page 20, and as shown in Figure 2 that

"...As shown in Fig. 2, in the present invention, the masking layer (2) enters into the dielectric film (1b) and also is formed on the infiltrated portion while the solid electrolyte

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which infiltrates into the dielectric film (1b) cannot infiltrate into the dielectric film into which the masking material has already infiltrated and has a structure completely masked by the masking layer formed on the infiltrated layer”;

However, first, since the dielectric oxide film is very dense, it is not sure how the masking material solution infiltrates into the dielectric film (the dielectric film, it-self, per se). Second, since the solid electrolyte infiltrates into the dielectric film (1b) to the core metal material 1a, (see Figs. 2,8 and Abstract) the solid electrolyte capacitor would be short-circuiting in operation. This is due to the electrical connection and direct contact from the anode terminal through the infiltrated solid electrolyte (which solid electrolyte infiltrating into the dielectric film to core metal), then through the solid electrolyte 4, and then to the cathode terminal. In other words, the dielectric layer for insulating the anode terminal from the cathode terminal is infiltrated with conductive solid electrolyte.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

5. Claims 1-3, 8-9,11,12,14 are rejected under 35 U.S.C. 102(b) as being anticipated by Kudoh et al (5,198,967).

Kudoh et al teach a method for producing a solid electrolyte capacitor comprising a metal material having thereon a dielectric film and a solid electrolyte formed on a desired portion of the dielectric film 21, the metal material having valve action (col 9, lines 16-21), wherein the method comprising the step of coating a masking material solution of pre-polymer 13 (col 9,

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lines 44-47; col 15, lines 44-48) so that the solution inherently infiltrates into the dielectric film 21 formed on the valve-metal substrate 12 and forms a masking layer on the infiltrated portion (Figs 4a, 4b, 5). Re further claim 2, wherein due to in-situ curing of the pre-polymer solution (col 9, lines 44-47), the masking resin polymer is solidified during coating, and preventing infiltration of a solid electrolyte formed in a subsequent step.

Re further claim 3, since the solid electrolyte can not infiltrate in the dielectric film where the masking resin has infiltrated, a concentration of solid electrolyte is not existed in that masked portion and thus is not higher than a detection limit value attained by using of a known electron probe microanalyser. Re further claim 8, wherein the pre-polymer solution for masking material is heat resistant resin (col 9, lines 44-47, lines 22-27; col 5, lines 39-49). Re claim 11, tantalum or aluminum for the metal is mentioned at col 18, lines 15-16. Re claims 12, 14, pyrrole and thiophene, sulfonic salt for forming the solid electrolyte are mentioned at col 5, line 56 through col 6, line 6.

6. Claims 1-3, 8-9, 11, 12, 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Kenichi et al (JP-05047611), with Applicant admitted prior art (specification pages 3-4) as evidence.

Kenichi et al teach a method for producing a solid electrolyte capacitor comprising a metal material having thereon a dielectric oxide film and a solid electrolyte formed on a desired portion of the dielectric film, the metal material having valve action (English abstract) wherein the method comprising the step of coating a masking material solution by "electrodepositing a solution containing a polyamic salt at least a part of the valve-acting metal in the area where the solid electrolyte is not formed, thereby forming a polyamic acid film and dehydration-curing the film by heating to form a polyimide film", wherein the "method of forming a polyimide film by electro-deposition may successfully form a film even inside the pore parts" (see Applicant admitted prior art at specification pages 3-4) so that the solution inherently infiltrates into the dielectric oxide film formed on the valve-metal substrate and forms a masking layer on the infiltrated portion (Figs 1-3). Re further claim 2, wherein due to dehydration and curing, the masking resin polymer is solidified during coating, and preventing infiltration of a solid electrolyte formed in a subsequent step.

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Re further claim 3, since the solid electrolyte can not infiltrate in the dielectric film where the masking resin has infiltrated, a concentration of solid electrolyte is not existed in that masked portion and thus is not higher than a detection limit value attained by using of a known electron probe microanalyser. Re further claim 8, wherein the polyimide film as masking material is heat resistant resin. Re claim 11, aluminum for the metal is mentioned in the English abstract. Re claims 12,14, pyrrole and sulfonic salt for forming the solid electrolyte are also mentioned by Kenichi.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kudoh et al (5,198,967) taken with Applicant admitted prior art.

Kudoh et al teach a method for producing a solid electrolyte capacitor as applied above to claims 1-3, 8-9,11,12,14.

Kudoh et al mentions tantalum or aluminum for the metal material (re claim 11) and pyrrole and thiophene, sulfonic salt for the solid electrolyte (re claim 12), but do not list other alterative materials as recited in claims 11,12-13, and do not mention mask solution contains silicon oil, silane coupling agent, or polyimidesiloxane as recited in claim 10.

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Although it is considered that these alternative materials are well known in the art for substitution, Applicant admitted prior art (present specification pages 2-4, 31, line 12+, page 37, line 15+) mentions some other alternative materials as taught in the Japanese patent applications, for example, titanium, aluminum, titanium, 3,4-ethylenedioxythiophene (claim 13), silicone oil, polyimidesiloxane, etc.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Kudoh by employing these alternative materials as taught by Applicant admitted prior art and as well known in the art. This is because the substitution of art recognized equivalent materials would have been within the level of one having ordinary skill in the art.

9. Claims 1-3, 8-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Kenichi et al (JP-05047611), with Applicant admitted prior art (specification pages 3-4) as evidence, and further of Nakamura et al (5,483,415).

Kenichi et al teach a method for producing a solid electrolyte capacitor as applied above to claims 1-3, 8-9, 11, 12, 14, and incorporated herein, in which a metal material having thereon a dielectric oxide film and a solid electrolyte formed on a desired portion of the dielectric film, the metal material having valve action, wherein the method comprising the step of coating a masking material solution by "electrodepositing a solution containing a polyamic salt at least a part of the valve-acting metal in the area where the solid electrolyte is not formed so that the solution inherently infiltrates into the dielectric film and forms a masking layer on the infiltrates portion. Since the coating material is a liquid solution, the material inherently infiltrates into the dielectric film and forms a masking layer on the infiltrates portion. Indeed, Nakamura et al '415 evidently teach (at figures 1-2 ; col 5, lines 22-42) to coat a masking material solution by immersing the valve-acting tantalum metal into a liquid insulating substance so that the liquid solution infiltrates the porous chip and thus forming a masking layer on the infiltrated portion and thus preventing infiltration of a solid electrolyte formed in a subsequent step.

Kudoh teaches the use of tantalum or aluminum for the metal material (re claim 11) and pyrrole, thiophene, and sulfonic salt for forming the solid electrolyte (re claim 12), but lacks to list other alternative materials as recited in claims 11, 12, and 3,4-ethylenedioxythiophene as in

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claim 13, and do not mention mask solution contains silicon oil, silane coupling agent, or polyimidesiloxane as in claim 10.

Although it is considered that these alternative materials are well known in the art for substitution, Applicant admitted prior art (present specification pages 2-4, 31, line 12+, page 37, line 15+) mentions some other alternative materials as taught in the Japanese patent applications, for example, titanium, aluminum, tantalum, 3,4-ethylenedioxythiophene (claim 13), silicone oil, polyimidesiloxane, etc.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Kudoh by employing these alternative materials as taught by Applicant admitted prior art and as well known in the art. This is because the substitution of art recognized equivalent materials would have been within the level of one having ordinary skill in the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael M. Trinh whose telephone number is (703) 308-2554. The examiner can normally be reached on M-F from 8:30 Am to 4:30 Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Whitehead Jr Carl can be reached on (703) 308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Oacs



Michael Trinh
Primary Examiner